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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/511,973	10/20/2004	Guido Odilon Maurits D'Hoogh	BE 020010	9115

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EXAMINER

RU, POWEN

ART UNIT PAPER NUMBER

2194

DATE MAILED: 07/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.	Applicant(s)	
	10/511,973	D'HOOGH, GUIDO ODILON MAURITS	
	Examiner	Art Unit	
	Powen Ru	2194	

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10/20/2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 October 2004 is/are: a) ☒ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 20041020.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

This is the initial office action based on the application filed on 10/24/2004.

Claims 1-10 are currently pending and have been considered below.

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "4Bt" has been used to designate both the top portion of the second diaphragm body and the base portion of the second diaphragm body in both FIG.1 and 2. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The abstract of the disclosure is objected to as failing to comply with 37 CFR 1.72(a), because it exceeds 150 words in length (193 words) and the first sentence is incomplete. The abstract should be in narrative form and generally limited to a single

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paragraph on a separate sheet within the range of 50 to 150 words. The Applicant may remove the reference numbers to reduce word count. Correction is required.

3. The disclosure is objected to because of the following informalities:
- Missing content headings, e.g., "BACKGROUND OF THE INVENTION", "SUMMARY OF THE INVENTION", "BRIEF DESCRIPTION OF THE DRAWINGS", "DETAILED DESCRIPTION", etc.
 - Inconsistent terms: For item 4B, there are "diaphragm body" (e.g., page 3 line 26), "second diaphragm" (e.g., page 3 line 27), and "second diaphragm body" (e.g., page 4 line 15).
 - Inconsistent terms: For item 16, there are "spider" (e.g., page 4 line 12) and "second flexible suspension means" (e.g., page 4 line 33).

Appropriate correction is required.

Claim Objections

4. Claims 1: Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation to comply with 37 CFR 1.75(i).
5. Claim 4, 6, 7, and 10 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 4 recites the limitation "first diaphragm body" which is broader than the limitation "the base portion of the first diaphragm body" (line 13) as in Claim 1 and the limitation "the frame or a mounting element fixed to the frame" which is broader than the limitation "frame" (line 13) as in Claim 1.

Claim 6 recites the limitation "first and/or second diaphragm body" which is broader than the limitation "the top portion of first and/or the base portion of second diaphragm body" (lines 14-16) as in Claim 1.

Claim 7 recites the limitation "mechanical structure" which is an alternative limitation in Claim 6. In order to overcome this objection, the Applicant should make this limitation a necessary one, e.g., to remove "the frame or".

Claim 10 which is drawn to a loudspeaker unit does not further limit the loudspeaker as claimed in Claim 1. The Applicant may simply recite all of the limitations in Claim 1 to overcome this objection. .

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 8 recites the limitation "mounting element" in line 2.

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There is insufficient antecedent basis for this limitation in the claim. The Examiner considers that the base claim should be Claim 7 which recites a mounting element, not Claim 6.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al. (JP08205283A) in view of Sakamoto (5,841,880). The following is a partial translation of Sato et al.:

[0017] Drawing 1 shows the fundamental structure of the thin loudspeaker 20 by one example of this invention. A diaphragm 21 contains the inside cone part 22 which carried out opening above drawing which is the direction of a loudspeaker transverse plane, the outside cone part 23 which is the direction of a tooth back and which carried out opening end, and the coupling part 24 which connects both. An edge 25 is formed in the rim of the outside cone part 23. The center cap 26 is stuck on a way among the inside cone parts 22. In the lower part of the center cap 26, the end of the voice coil bobbin 28 is joined to the connection 27 of the method edge of the innermost of a diaphragm 21. In the middle of the voice coil bobbin 28, a damper 29 is stuck, and the voice coil bobbin 28 is held on a medial-axis line, permitting the mechanical reciprocating motion changed from the electrical input by the conversion means 30 of the lower part.

[0018] The conversion means 30 contains the field magnet part 32 which gives a powerful field to the voice coil 31 wound around the lower part of the voice coil bobbin 28, and a voice coil 31. In the field magnet part 32, an outer type magnetic circuit is constituted including the magnet 33 which is a permanent magnet, a plate 34, and the pole piece 35. The voice coil bobbin 28 is inserted in the erection section of the pole piece 35, and the electromagnetic force corresponding to a current is given to a voice coil 31 from the magnetic field in the magnetic opening formed between the peripheral faces of the erection section of the pole piece 35 which opposes the inner skin of the through tube formed in a plate 34. The rim side of a damper 29 and the base of the pole piece 35 is supported by the frame 36 the rim side of an edge 25.

[0019] Drawing 2 shows the condition of having attached the thin loudspeaker 20 of drawing 1 in the door 37 of an automobile. A door 37 is opened and closed when a window 38 appears frequently. Originally, a door 37 is considerably formed in a thin shape, and further, inside, although the breaker style 39 for window 38 etc. is contained by the interior, if it is the thin

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loudspeaker 20 by this example, attachment will be easily made as a door loudspeaker by it. Door trim 37a is prepared around the thin loudspeaker 20, and, ahead, the grille 40 which makes a sound penetrate is formed.

Claim 1: The Examiner notes that it appears that the Applicant is attempting to invoke 35 U.S.C. 112, 6th paragraph, with the use of means-plus-function language in the claim. The claim will be treated under 35 U.S.C. 112, sixth paragraph. The limitation "electric driving means" has detailed structural description in the claim; the limitation "first flexible suspension means" will be construed as the "flexible corrugated annular rim 14" described in the specification (e.g., page 4 line 9); and the limitation "second flexible suspension means" will be construed as the "undulating centring spider 16" described in the specification (e.g., page 4 lines 12-13). Sato et al. discloses a loudspeaker (20 [0017]) provided with a frame (36 [0018]), a diaphragm (21 [0017]), and an electric driving means (conversion means 30 [0017]) for moving the diaphragm along an axis of translation (see Fig. 1) with respect to the frame, which diaphragm runs around the axis of translation and includes an outer conical first diaphragm body (outside cone part 23 [0017]) and an inner conical second diaphragm body (inside cone part 22 [0017]) which is invertedly oriented with respect to and positioned inside the first diaphragm body (see Fig. 1), each body having a base portion and a top portion, the top portion of the first diaphragm body and the base portion of the second diaphragm body being interconnected (see Fig. 1, near edge 25) , and which electric driving means includes a stationary part (field magnet part 32 [0018]) connected to the frame and a movable part (voice coil 31 and voice coil bobbin 28 [0018]), wherein the diaphragm is suspended from the frame through a first flexible suspension means (edge 25 [0018])

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extending between the base portion (see Fig. 1, near edge 25) of the first diaphragm body and the frame (see Fig. 1), and wherein the top portion (see Fig. 1, near connection 27 [0017]) of the second diaphragm body is attached to the movable part of the driving means (see Fig. 1); and further discloses a second flexible suspension means (damper 29 [0017]); but does not specifically disclose that the diaphragm is suspended from the frame through the second flexible suspension means. However, Sakamoto discloses a light and cost effective speaker, in which the diaphragm (1cd, see Fig. 5) is suspended from the frame (6, see Fig. 6B) through the second flexible suspension means (damper 3, see Fig. 6B) extending between the top portion of the first diaphragm body and/or the base portion of the second diaphragm body (valley 11, see Fig. 5) on the one hand and the frame or a mechanical structure fixed to the frame (damper shaft 7, see Fig. 6B) on the other hand. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to place a suspension means between the coupling part of a diaphragm and a mechanical structure fixed to the frame. As Sakamoto teaches such arrangement results in size reduction (col 8 lines 50-60) and easy integral design (col 8 line 60 – col 9 line 3), one would have been motivated to position the second flexible suspension means in the way suggested by Sakamoto in Sato et al. loudspeaker to gain advantages in both manufacturing and application usage.

Claim 2: Sato et al. and Sakamoto disclose a loudspeaker as in Claim 1; and Sato et al. further discloses that the driving means is positioned opposite to the second diaphragm body and at least partly inside the first diaphragm body (see Fig. 1).

Claim 3: Sato et al. and Sakamoto disclose a loudspeaker as in Claim 1; and Sato et al. further discloses that the stationary part of the driving means includes a magnetic yoke (e.g., pole piece 35) with a permanent magnet (33 [0018]) and the movable part of the driving means includes a driving coil (voice coil 31) for an electromagnetical cooperation (electromagnetic force [0018]) with the magnetic yoke.

Claim 4: Sato et al. and Sakamoto disclose a loudspeaker as in Claim 1; and Sato et al. further discloses that first flexible suspension means is attached to the first diaphragm body (see Fig. 1, near edge 25) on the one hand and the frame or a mounting element fixed to the frame on the other hand (see Fig. 1).

Claim 5: The Examiner notes that it appears that the Applicant is attempting to invoke 35 U.S.C. 112, 6th paragraph, with the use of means-plus-function language in the claim. The claim will be treated under 35 U.S.C. 112, sixth paragraph. The limitation "radial bearing means" will be construed as the "centring or spider" described in the specification (e.g., page 2 line 24). Sato et al. and Sakamoto disclose a loudspeaker as in Claim 1; and Sato et al. further discloses that the second flexible suspension means is a radial bearing means (damper 29).

Claim 6: Sato et al. and Sakamoto disclose a loudspeaker as in Claim 1; and Sato et al. further discloses that the second flexible suspension means is attached to frame; but does not disclose the second flexible suspension means is attached to the first and/or second diaphragm body. However, Sakamoto discloses a speaker, in which the second flexible suspension means (damper 3) is attached (see Fig. 5, near valley 11) to the first and/or second diaphragm body (valley 11, see Fig. 5) on the one hand.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to attach a suspension means to diaphragm. As Sakamoto teaches such arrangement results in size reduction (col 8 lines 50-60) and easy integral design (col 8 line 60 – col 9 line 3), one would have been motivated to position the second flexible suspension means in the way suggested by Sakamoto in Sato et al. loudspeaker to gain advantages in both manufacturing and application usage.

Claim 7: Sato et al. and Sakamoto disclose a loudspeaker as in Claim 6; but does not disclose a mounting element secured to the stationary part of the driving means. However, Sakamoto discloses a mechanical structure includes a mounting element (magnet circuit shaft 8) secured to the stationary part (flange 82) of the driving means (Fig. 6B). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use a mounting element secured to the stationary part of the driving means to fix the suspension on the one end when the other end of the suspension is attached to the diaphragm. As the suspension is opposed to the frame, in order to fix one end of the suspension, one would have been motivated to add Sakamoto's mounting element in Sato et al. to support the diaphragm.

Claim 8: Sato et al. and Sakamoto disclose a loudspeaker as in Claim 7 (not Claim 6, see **Claim Rejections - 35 USC § 112**); and Sato et al. further discloses a central support (pole piece 35 [0018]) located at the axis of translation of the diaphragm and at least partly positioned inside the diaphragm (see Fig. 1).

Claim 9: Sato et al. discloses a loudspeaker as in Claim 1; and further discloses that the first diaphragm body and the second diaphragm body form an integral diaphragm body (coupling part 24 [0017]).

Claim 10: Sato et al. discloses a loudspeaker unit (Fig. 2) provided with an enclosure (grille 40 [0019]) and a built-in loudspeaker (thin loudspeaker 20 [0019]) according to Claim 1.

Conclusion


10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Codnia et al. (5,526,441) discloses a full range convex electrodynamic loudspeaker; Proni (6,330,340) discloses a loudspeaker with a diaphragm having integral vent bores; and Millward (4,427,846) discloses a moving coil loudspeakers

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Powen Ru whose telephone number is 571-270-1050. The examiner can normally be reached on Monday-Thursday 7:30am-3:30pm EST/EDT.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Myhre can be reached on 571-270-1065. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


PR
7/19/2006


James W. Myhre
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